Chapter 10-50: Supplemental to Zones

Content:

Division 10-50.10: Purpose

Sections:

10-50.10.010 Purpose

This Chapter provides standards that are supplemental to the regulations of each zone, and are specific to particular aspects of development, such as landscaping, parking, outdoor lighting and signage, among others. These standards are intended to promote development that compliments the unique, historic character of Flagstaff, while preserving and enhancing the natural resources and environments that are embraced by the local community and visitors alike. This Chapter is also intended to encourage a character and quality of development that reinforces the natural, walkable urban, or drivable suburban contexts within Flagstaff.

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Division 10-50.20: Architectural Design Standards

Sections:

10-50.20.010 Purpose

This Division establishes regulations that reinforce the unique character of Flagstaff's architectural history. It also promotes the use of indigenous, traditional building materials and a human scale to create an inviting pedestrian realm. The regulations in this Division encourage new development to be in character and scale with the existing fabric of Flagstaff.

10-50.20.020 Applicability

A. The standards found within this Division shall apply to all development within the City in accordance with the requirements and procedures established in Section 10-20.40.140 (Site Plan Review and Approval) and as follows:

1. Applications for site plan review or expansions involving commercial, multi-family (duplex and greater), business park, and institutional uses that:

   a. Contain greater than 1,000 square feet of gross floor area; or

   b. Include expansions greater than 25 percent of gross floor area. Building additions, either with a single addition or cumulative additions subsequent to February 1, 2002 (the effective date of the Design Review Guidelines adopted into the 1991 Land Development Code), will count towards the 25 percent expansion of gross floor area);

2. Applications for Conditional Use Permits;

3. Applications involving façade changes to street frontage building elevations; and

4. Applications for new development in Historic Districts which shall comply with these standards as well as any design standards established for the district.

B. The standards found within this Division shall not apply to the following:

1. Individual single-family dwellings;

2. Industrial buildings outside of business parks; and

3. Buildings within a Traditional Neighborhood Community Plan (See Division 10-30.80) that provides architectural standards.

10-50.20.030 Architectural Standards

A. **Applicable to All Zones**

1. **Building Materials**

a. **Primary Materials**
Use indigenous and traditional building materials for primary wall surfaces. A minimum of 75% of walls visible from a public way (excluding glass) shall use the following standards:

(1) Brick, stone, rusticated block or comparable modular masonry are preferred primary building materials. Color should be integral to the material.

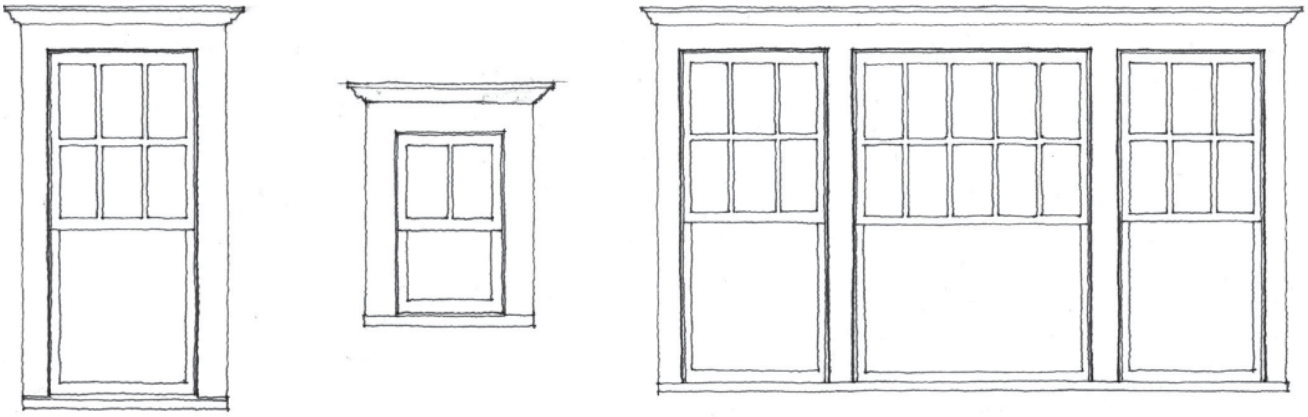
(2) New materials that convey the texture, scale, color and matte finish similar to masonry will be considered where appropriate. For example, in some instances, masonry alternatives to stone may include stained, textured, rough-sawn board-form concrete, cast concrete molded from native stone, or split faced concrete masonry units.

(3) Rusticated metal, board and batten siding, and painted or stained wood lap or in shingle pattern, where appropriate to the building use, style and setting.

b. **Secondary Materials**

(1) Non-indigenous or non-traditional building materials may be used as a secondary or accent material. They may not be used as a primary material, but they may be used as a secondary material, composing up to 25 percent of the walls visible from the public way (excluding glass). These materials include the following:

(a) Highly reflective, mirrored glass, large expanses of metal panels, or other shiny materials.



Examples of several variations of traditional window proportions and combinations.

(b) Stucco (and its artificial derivatives), when tinted earth tone colors and detailed to convey a sense of human scale, is appropriate as a secondary building material, i.e., on second floors or above other primary building materials. Reveal and scoring lines should be used to create panels that establish shadow lines and visual relief.

(2) Exceptions to the use of secondary materials in the design of a building may be granted if the applicant can demonstrate that all of the following conditions have been satisfied;

(a) The design of the building(s) meets or exceeds all other architectural design requirements;

(b) The design is compatible with the context of the area within which it is located (See also Section 10-30.60.080 (Compatibility);

(c) The use of stucco shall emulate masonry construction with deep recessed windows and doors, and other expressions of thick walls;

(d) Stucco shall always be placed below other non-masonry materials on a building; and,

(e) The proposed design should be an established architectural style representing the use of stucco in Flagstaff, such as a Territorial style (represented by for example, the El Pueblo Motel), a Tudor style (for example, the Flagstaff Railway Station) or the Craftsman style cottages in the Flagstaff Townsite historic neighborhood.

Local examples of the use of brick, stone, rusticated block. Also note window type, proportions, and details.

Local examples of the use of horizontal lap siding and wood shingles, note the appropriate use of color on the siding and trim. Also note window type, proportions, and details.

Local example of the use of a combination of materials.

Local examples of the limited use of stucco in combination with other appropriate materials.

Contemporary local examples that represent the diversity of combinations of appropriate materials and colors.

Local examples that represent the diversity yet continuity within Flagstaff's unique architectural character in scale, massing, materials, and color.

2. **Color**

a. Use muted colors and earth tones for building and roof materials

(1) Bright colors are appropriate only for accents.

(2) A minimum of 75% of the exterior walls seen from a public way shall have muted colors and earth tones.

B. **Building Massing and Scale**

1. **Scale**
It is important that a building be scaled to its context (See also Section 10-30.60.080 (Compatibility). In order to ensure appropriate scale, at least two of the following four standards shall be met:

a. Express façade components in ways that will help to establish an appropriate scale in relation to a building's context, including:

(1) Define a rhythm and pattern of windows, columns, and other architectural features; and

(2) Use windows and doors that are similar in proportion and scale to those seen traditionally. These vertical proportions are typically 1:1.5 or higher.

b. Provide a human scale to the primary entrance.

c. Express the position of each floor in the external design of a building to establish a human scale.

(1) Articulate structural elements; and/or

(2) Change materials between floors; and/or

(3) Use an expression line.

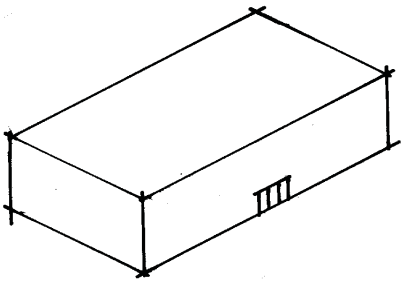
d. Use building materials that help establish a character appropriate to a building's context.

(1) Use materials that provide a fine-grained scale to buildings. Examples include:

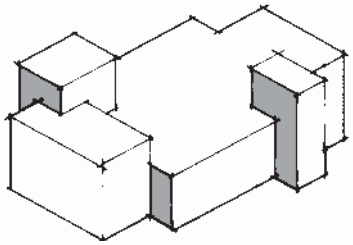
(a) Brick in standard module; and/or

(b) Shingle or horizontal lap siding.

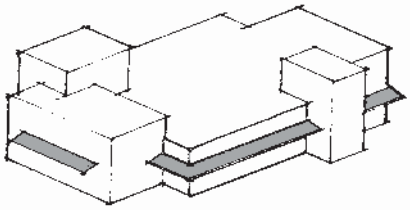
(2) Avoid large panelized products or extensive featureless surfaces.



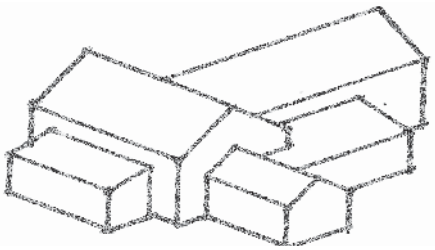
Inappropriate architectural treatment.



Appropriate use of vertical articulation.



Appropriate use of horizontal articulation.



Appropriate use of roof height variations to add architectural articulation.

Photograph and elevation of an appropriate use of sloping roof forms to reduce the perceived scale of the building.

2. **Building Massing**
For all buildings in non-transect zones, wall planes shall be divided into modules that express traditional dimensions such that a primary façade plane shall not exceed 75 feet in length. If a wall plane exceeds this dimension, then a jog shall be provided to divide it into subordinate elements each less than 75 feet in length. The depth of the jog shall be a minimum of 20 percent of the height of the wall plane. In addition, a combination of at least two of the following techniques shall be employed:

    a. Change the height of a wall plane or building mass by providing vertical articulation. The change in height shall be at least 20 percent of the vertical height of an adjacent wall plane or building mass;

    b. Change the roof form to express different modules of the building mass; and/or

    c. Divide large wall planes into smaller components by changing the arrangement of windows and other façade articulation features, such as columns or strap work.

3. **Roof Form**
Incorporate at least two of the following features to add architectural articulation and reduce perceived scale:

    (1) A flat roof with parapet;

    (2) A cornice or molding to define the top of a parapet;

    (3) Overhanging eaves;

    (4) Sloping roofs with a minimum pitch of 4:12; and/or

    (5) Multiple roof planes.

4. **Street Level Interest**

    a. Provide visual interest to pedestrians at the street level.

    b. Provide visual interest in walkable environments with retail or service uses with:

        (1) A display window providing views to activities in the building;

        (2) A display case with exhibits, where internal functions do not permit windows; or

(3) A decorative wall surface, such as a mural or sculptural feature.

c. Large expanses of blank wall shall not be used when a façade faces a public way or a major pedestrian route.

5. **Location and Orientation of Building Entrances**

a. The main entrance to a building shall be clearly identifiable.

b. The primary entrance of a building shall be oriented to face a street, plaza or pedestrian way.

6. **Garage Doors**
To decrease the prominence of garage doors and emphasize front entryways, the following strategies shall be used.

a. Recess garage doors 18 inches or more into a wall plane or behind architectural elements.

b. One-car or two-car garage doors shall be used for garage door openings. Garages providing parking for more than two cars shall use a combination of one-car and two-car garage doors.

c. Garage doors located in front of the main façade of a building shall not face directly onto a thoroughfare unless it is not feasible due to existing site conditions. For this standard, alleys and rear lanes shall not be considered a thoroughfare.

7. **Parking Lots**
Parking lots shall follow the standards in Section 10-30.60.050 (Parking Lots, Driveways and Service Areas), Division 10-50.80 (Parking Standards), Division 10-50.60 (Landscaping Standards) and should be located to the side or behind a building, rather than in front, to reduce the visual impact of the parking lot.

C. Compatibility
The architectural standards established in Section 10-30.60.080 (Compatibility) shall also be considered and applied when assessing the compatibility of a new project relative to existing adjacent development.

Division 10-50.30: Building Height

Sections:

10-50.30.010 Purpose

This Division sets forth the standards for determining how building height shall be measured and other height related standards to ensure that new development reinforces the highly valued character and scale of Flagstaff's existing neighborhoods and downtown. These standards shall be used in combination with the standards established in Chapter 10-40 (Specific to Zones).

10-50.30.020 Applicability

The standards found within this Division shall apply to all development in the City of Flagstaff.

10-50.30.030 How Building Height is Measured

This Section provides the methodology used to measure the height of a building in terms of number of feet above grade and the number of floors. The methodology applies to primary and accessory buildings and structures. The maximum height of a building or structure is established in Chapter 10-40 (Specific to Zones) and Section 10-40.60.020 (Accessory Buildings and Structures).

A. **Applicable to All Zones**

1. **Building Height Plane**

a. The building height plane defines the maximum height that a building may be built. The building height plane follows the natural grade of the site and shall be measured as follows:

(1) Shall be an imaginary plane parallel to the natural grade;

(2) Shall be measured vertically at the maximum height allowed in the zone as established in Chapter 10-40 (Specific to Zones) and Section 10-40.60.020 (Accessory Buildings and Structures); and

(3) Applicants shall be responsible for compliance with the height requirements of this Division and verification of the field accuracy of contour data.

b. Primary buildings with a roof pitch greater than 6:12 shall be allowed an additional five feet above the maximum building height in the zone. Accessory buildings and structures regardless of roof pitch shall not be allowed any additional building height.

2. **Overall Building Height**

a. Overall building height shall be measured vertically from the natural grade or finished grade adjacent to the building exterior to the highest point of coping of a flat roof, the top of a mansard roof, or the highest point of the highest pitched roof.

b. Overall building height shall not exceed the building height plane, described in Subsection 1 above, except as follows:

(1) The following elements attached to a building shall be excluded from the height measurement with the limitation that the total area covered by such elements shall not exceed 20 percent of the roof area of the building:

(a) Chimneys;

(b) Stair and elevator towers;

(c) Mechanical equipment; and,

(d) Steeples, towers and other unoccupied architectural features provided that such features may extend a maximum of 20 percent above the building height plane allowed for the zone.

(2) The following elements attached to a building shall be excluded from the height measurement with no limitations on the roof area covered by such elements:

(a) Flagpoles;

(b) Solar roof paneling; and,

(c) Solar water heaters.

(3) The height of flagpoles shall be limited to the allowable building height of the zone in which it is located (Refer to the Building Form Standards tables in Chapter 10-40 (Specific to Zones).

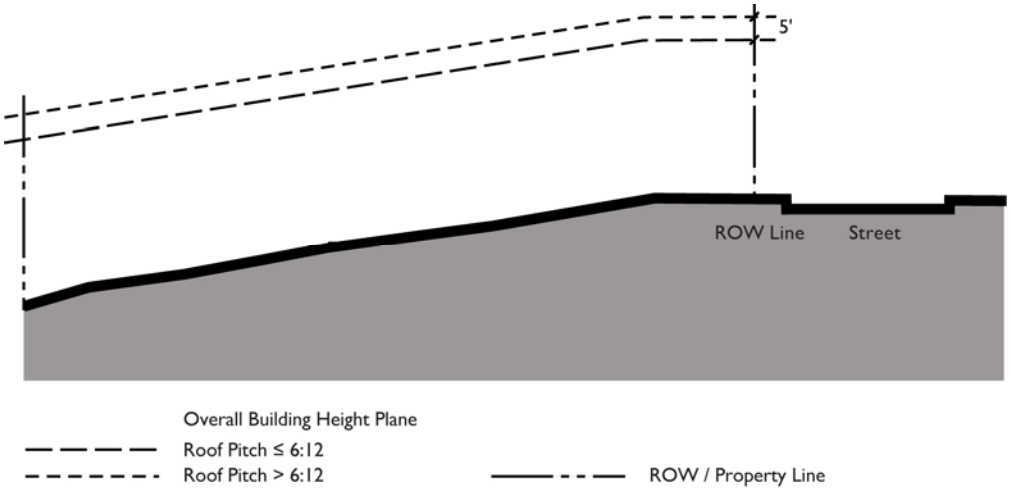


Figure A. Building height plane for an undeveloped site (not drawn to scale).

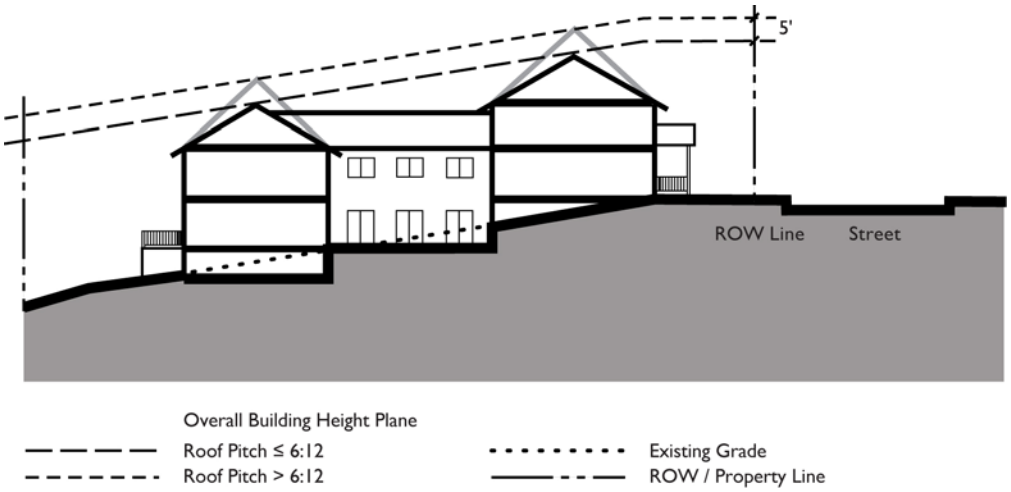


Figure B. Pitched roof building height measurements (not drawn to scale).

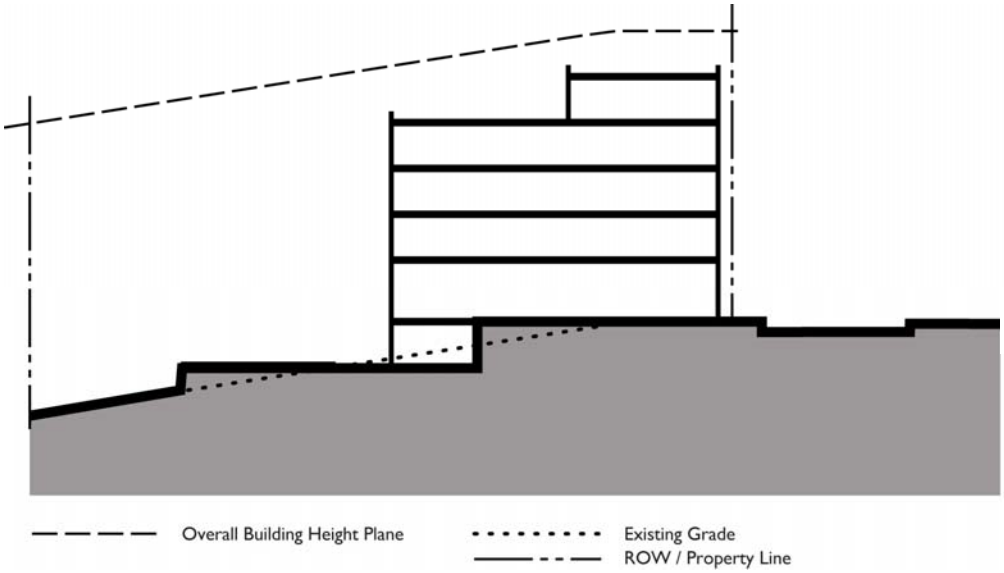


Figure C. Flat roof building height measurements (not drawn to scale).

3. **Crawl Spaces**

   a. Unfinished crawl spaces shall be included in the height calculation.

   b. Unfinished crawl spaces taller than three feet shall be screened with landscaping from view of public streets or thoroughfares.

   c. Unfinished crawl spaces shall not exceed five feet in height measured from the exterior finished grade to the finished floor of the floor above.

4. **Basements/Basement Garages**
   Exterior walls of basements or basement garages visible from a street shall not exceed nine feet in height measured from the exterior finished grade to the finished floor of the floor above.

B. **Applicable to Transect Zones**
Transect zones use several methods to determine the building height in addition to overall building height, including measuring to the eave or parapet and the maximum number of stories. These standards work together to help ensure that development is consistent with the character and scale within the City.

1. **Overall Building Height**
   See Subsection A.2 above.

2. **Height to Eave/Parapet**
   Building height to eave/parapet shall be measured from the eave or top of parapet to natural grade or finished grade at the lowest point adjacent to the building exterior, whichever yields the greatest height.

3. **Maximum Number of Stories**
   In the transect zones building height is also regulated by the number of floors allowed in a building. The maximum number of stories allowed in a building is established in Division 10-40.40 (Transect Zones). The following methodology shall be used to determine the number of floors in a building.

   a. A story or floor shall meet the following height standards. The standards in this section work in combination with those established in Division 10-40.40 (Transect Zones). See Table A (Maximum Height of a Floor) for standards for uses in all transect zones.

   b. The maximum height of a floor is set in Table A (Maximum Height of a Floor - Transect Zones). Floors that exceed the maximum heights established in Table A shall be counted as two floors.

   c. Unfinished attics shall not count as a story.

d. Finished attics with a knee wall maximum height of three feet and a finished floor to finished ceiling maximum height of nine feet shall for the purposes of calculating height count as one-half story. Finished attics with a knee wall less than three feet or a finished floor to finished ceiling height of greater than nine feet shall count as a full story.

e. Basements with an exterior exposed wall greater than three feet shall count as a floor. Height of the exterior wall shall be measured from natural grade or finished grade to finished floor of the floor above.

Table 10-50.30.030.A: Maximum Height of a Floor - Transect Zones[1]

	Non-Residential, except Civic Uses	Multi-Family Residential	Single-Family Residential[2]
Single Story	20' max.	16' max.	14' max.
Multi-story Buildings			
Ground Floor	16' max.	16' max.	14' max.
All Other Floors	12' max.	12' max.	14' max.

[1] All heights are measured finished floor to highest point of the finished ceiling.

[2] This standard does not apply in T2, T3N.1 or T3N.2 T4N.1 or T4N.2 where single-family building types are permitted.

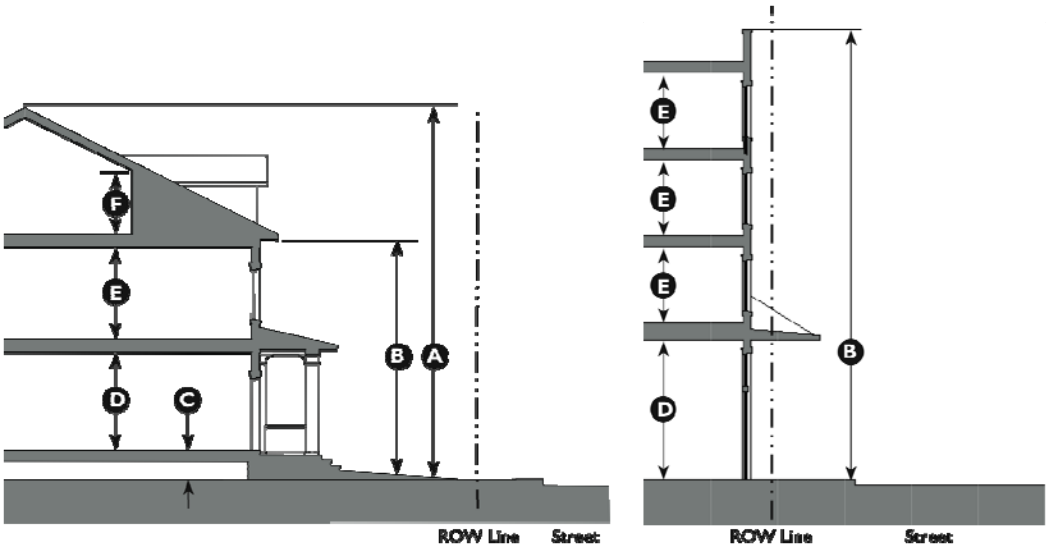


Figure D. Transect Zone Building Height Measurements (not drawn to scale).

Key

A Overall Building Height **B** Height to Eave / Parapet **C** Crawl Space

D Ground Floor **E** Other Floors **F** Knee Wall

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Division 10-50.40: Encroachments

Sections:

10-50.40.010 Purpose and Applicability

A. This Division provides standards for the allowed encroachment or projection of certain structures into required setback areas. This allows for specific architectural features or accessory structures to be developed in areas that might otherwise prohibit such features, providing more flexibility to property owners.

B. Additional standards for encroachments can be found in Division 10-40.40 (Transect Zones). If there is a conflict between any standards within the transect zones, the provisions within Division 10-40.40 (Transect Zones) control over this Division.

10-50.40.020 Encroachments into Minimum Required Setbacks

A. Allowed Encroachments
Table A (Allowed Encroachments into Setbacks and Heights) establishes elements that may encroach into required setbacks.

B. Access Ramps for Disabled Persons
Access ramps for disabled persons may encroach into a required setback, provided they are not more than 36 inches in height and remain five feet from the front property line, two feet from the side property line and 10 feet from the rear property line.

C. Rain Barrels and Cisterns
Rain barrels and cisterns used for rainwater harvesting in compliance with Section 10-50.60.070 (Water Use and Irrigation) shall be allowed to encroach into side and rear seatbacks to the property line, and no more than five feet into a front setback.

Table 10-50.40.020.A: Allowed Encroachments into Setbacks and Heights	
Awnings, Canopies, Decks, Porches, Stoops, Hooded Entries, Carports and Balconies[1,2]	
Front, Rear, Exterior Side Setback (max.)	5'
Interior Side Setback (max.)	3'
Accessory Dwelling Units (ADUs)[1]	
See Section 10-40.60.040	
Accessory Buildings and Structures[1]	
See Section 10-40.60.020	
Ground Mounted Solar Panels	
Front, Rear, Exterior Side Setback (max.)	5'
Interior Side Setback (max.)	3'
Open Stairways	
Rear and Exterior Side Setback	5' [2,3]
Interior Side Setback	3' [2,3]
Bay Windows, Open Eaves, Cornices, Fireplaces and Chimneys, and Window Sills	
All Setbacks (max.)	2'

End Notes:

[1] In no case shall the permitted encroachment exceed 50 percent of the required setback.

[2] Refer to applicable Building Code sections for permitted projections into setback areas and ensure that a 3' space is maintained between an open stairway and the property line.

[3] Refer to applicable Building Code sections for construction less than 5' from a property line.

Division 10-50.50: Fences and Screening

Sections:

10-50.50.010 Applicability

The requirements of this Division apply to all fences, walls, and screening unless otherwise stated.

10-50.50.020 Siting and Building Standards

A. **Fence and Wall Height**

1. Each fence or wall shall comply with the height limits shown in Table A (Maximum Height of Fences or Walls).

2. Fence height shall be measured as the vertical distance between the finished grade at the base of the fence and the top edge of the fence material.

B. **Nonresidential Fencing Exceptions**
A wrought-iron fence or a combination three-foot masonry wall topped by wrought iron or other similar fencing, either of which not to exceed a height of six feet to achieve security for those uses featuring display of merchandise or equipment, may be permitted along the street property line or within the front yard setback.

1. Chain-link fencing for this purpose shall be prohibited.

2. Any fence or wall associated with the screening along the perimeter of parking areas shall not exceed three and one half feet.

C. **Fences and Walls Between Different Land Uses**

1. Fences and walls between different land uses shall be provided in compliance with Table 10-50.60.040.B (Buffer and Screening Requirements).

2. Solid fences and walls between residential, recreation, education, public assembly, and retail uses may replace a portion of the required buffer requirements, as identified in Table 10-50.60.040.B (Buffer and Screening Requirements), with vegetated fencing upon Director approval.

Table 10-50.50.020.A: Maximum Height of Fences or Walls

Location of Fence or Wall	Maximum Height[1]
Residential Zones	
Within Front Setback[2]	
Solid Fence or Wall	3’
Vinyl Coated Chain Link or Decorative Wrought Iron	4’
Horse Corrals	5’
Within Side or Rear Setback	6’
Commercial Zones	
Within Front Setback[2]	
Street Buffers	6’ [3]
Screening along Perimeter of Parking Areas	3½’
All Other Front Setbacks	Not permitted
Within Side or Rear Setback	6’
Industrial and Public Facility Zones	
On Front Property Line[2]	6’
On Side or Rear Property Lines	8’

End Notes

[1] Heights shall not conflict with the *Engineering Standards* for sight visibility at street intersections (Refer to the *Engineering Standards*, Section 10-06-020 (Intersection Sight Triangles, Clear View Zones)).

[2] Open wire fencing or a wall may exceed the maximum height in front setbacks of schools, public and quasi-public buildings as approved by the Director.

[3] Fences and walls shall be placed in the rear (interior) of a required street buffer. Refer to Section 10-50.60.040.B.1 for street buffer requirements.

10-50.50.030 General Fencing and Screening Standards

A. **General**
All fencing and screening shall be in compliance with Section 10-50.60.050.D and Table 10-50.60.040.B (Buffer and Screening Requirements).

B. **Solid Fence**
For the purposes of this Division, a solid fence includes a fence assembled from fence boards with no greater than a one-half inch gap between them.

C. **Utility Boxes**
Utility boxes and cabinets shall be screened by solid fences and walls that match the building materials of the primary building on the site, or evergreen landscape materials as shown in Figure A (Utility Box Screening). Where feasible, utility boxes and cabinets shall be sited to the rear or side of a building, or in a location where visibility from public rights-of-way is minimized.

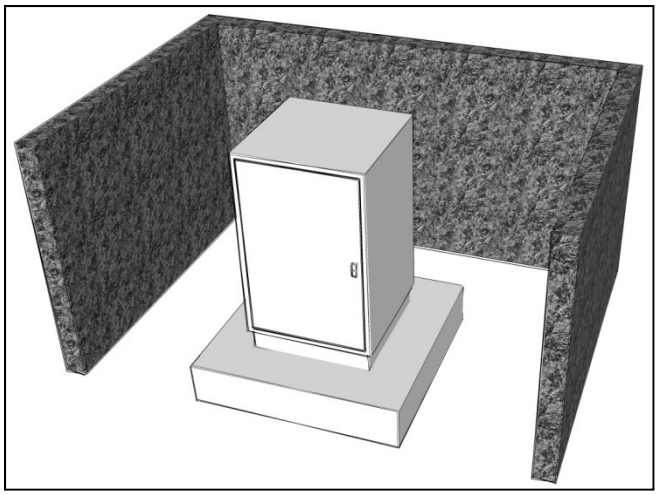

Figure A. Utility Box Screening

D. **Use of Chain Link Fences**

1. Only vinyl coated chain link fencing is allowed in residential zones.

2. Chain link fencing is not permitted in the CB Zone except as temporary fencing during construction.

E. **Use of Barbed Wire**

1. A minimum six-foot high screen topped with barbed wire is required for high-voltage transformers and any other utility structures or equipment of potential hazard. The barbed wire is not to extend beyond the property boundaries. Evergreen plant material a minimum height of five feet shall be planted adjacent to the exterior of the wall or fence a minimum of every 10 feet on center.

2. Barbed wire fences shall be allowed in the RR, PF and PLF/OS Zones.

3. In industrial zones, barbed wire shall be allowed at the top of a fence that is a minimum of six feet in height, with the total height not exceeding the maximum established in Table 10-50.50.020.A (Maximum Height of Fences or Walls). No part of the barbed wire shall project beyond the property boundaries.

4. Concertina or razor wire fences and electric fences are not permitted in any zone.

F. **Wildlife Compatible Fencing**
All fencing used shall be designed in compliance with the Arizona Game and Fish Department *Guidelines for Wildlife Compatible Fencing*.

G. **Horse Fencing**

1. **Wire Fences**
Wire fences, including hog fences, galvanized chain-link, and vinyl-covered chain-link fences are permitted for horse fencing. A wire or chain-link fence may be screened by the use of a three or four board fence. The wire or chain-link fence shall be attached to the board fence (see Figure B, below).

2. **Pipe Rail Fences**
Pipe rail fences are permitted for horse fencing. Pipe rail fences do not require the use of chain-link fencing (see Figure B, below).

Figure B. Pipe Rail Fence and Four Board Wire Fence

3. **Fences for Equestrian Uses**
Within the RR, ER, PF and PLF Zones three-rail fences used for equestrian facilities shall be left natural, or finished with a clear-coat, black, gray, or white paint.

H. **Fencing of Detention/Retention Basin**
Fencing proposed around detention/retention basins shall comply with the *Stormwater Regulations*.

10-50.50.040 Screen Walls

A. All outdoor storage areas for materials, refuse containers, mechanical equipment, or vehicles, and all loading/unloading areas or service bays shall be screened from street view by a screen wall constructed to a minimum height of six feet and designed in compliance with the standards of this Division.

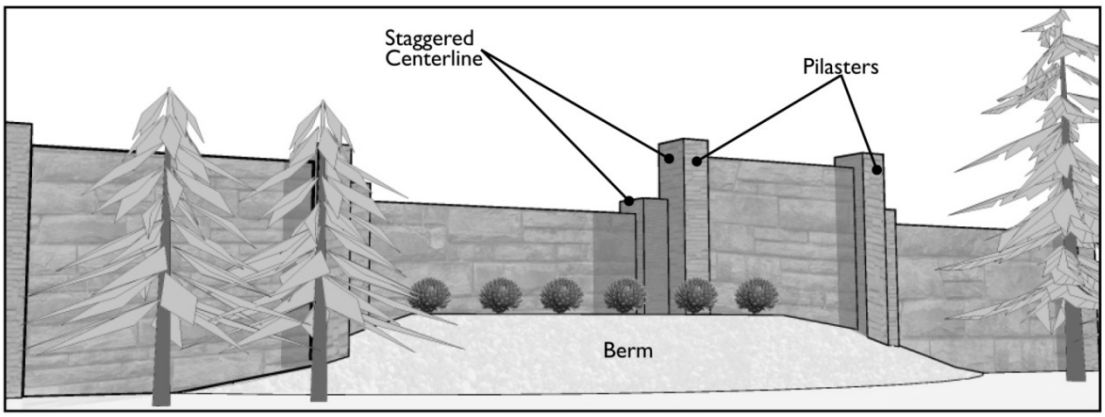

Figure A. Screen Walls

B. All screen walls required by this Zoning Code that are greater than 24 feet in length shall be designed and constructed to break up the lineal expanse of such walls with a staggered centerline, pilasters, three-wall enclosures, varying heights, the installation of extra plant materials, or varying the landscaped area contours by creating berms to lessen the visual impact of the wall.

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Division 10-50.60: Landscaping Standards

Sections:

10-50.60.010 Purpose and Benefits

A. **Purpose**

The purpose of this Division is to foster the creation of sustainable landscapes appropriate to the unique natural characteristics of Flagstaff. Located on the Colorado Plateau, Flagstaff has frequent dry summers, cold winter temperatures, high altitude, and a short growing season that together create special challenges for landscaping. In addition, Flagstaff has limited water resources, and, consistent with the General Plan's goal of being a steward of the natural environment, high expectations for the use and management of this precious resource have been established.

1. The intent of this Division, therefore, is to provide landscaping standards to:

   a. Establish and preserve sustainable landscaping that protects and promotes the unique natural character of Flagstaff;

   b. Ensure an appropriate balance between the value of responsible water use and the value of well-designed landscape areas;

   c. Improve community aesthetics;

   d. Protect native trees and plants, low-maintenance naturalized plants, and other natural resources;

   e. Improve the quality of the environment by enhancing air quality and reducing the spread of invasive plant species; and

   f. Provide an applicant with maximum flexibility while the public interest in planting viable landscaping and conserving the City water supply is protected.

2. **Sustainability**
   This Division establishes regulations for the installation and maintenance of landscaping and screening according to recognized xeriscape and low impact development (LID) principles identified in the City's *Stormwater Regulations* and *LID Manual*.

B. **Sustainable Landscaping**
This Division creates the framework for sustainably designed landscapes. Landscapes designed for Flagstaff's unique natural environment contribute to a sense of community and result in many environmental, aesthetic, and economic benefits. Some of the major benefits of sustainable landscaping are summarized in Table A (Benefits of Sustainable Landscaping).

Table 10-50.60.010.A: Benefits of Sustainable Landscaping

Water Conservation	An appropriately designed and maintained landscape area using native and drought-tolerant plants can ensure that water resources are conserved.
Air Quality	Plants improve air quality by absorbing pollutants, thereby reducing odors and filtering impurities.
Defining a Space	Landscaping can be appropriately and artfully arranged to define and frame special views, emphasize focal points, and complement a development's natural or man-made features.
Edible Landscaping	Incorporating edible landscaping creates a multi-functional landscape that provides returns (fruits, vegetables, etc.) on the investment of water, fertilizer, and time. A landscape that provides locally grown produce for consumption can be an important part of reducing energy inputs and environmental impacts.
Energy Conservation	Strategically placed landscaping around buildings will help to conserve energy as vegetation planted close to exterior walls traps air, creating an insulating effect. Trees that provide shade and filter sunlight lower indoor temperatures in the summer, reducing the need for air conditioning. Also, trees and shrubs can serve as windbreaks especially in the winter, to slow wind velocity and reduce heating costs.
Erosion and Runoff Protection	Trees, shrubs, and ground covers reduce soil erosion by binding soil particles with their roots and holding the soil together against the erosive effects of water and wind. Vegetation also slows storm water runoff, which improves water quality in natural drainages and reduces the need for engineered storm water drainage solutions.
Financial Benefits	Applicants can also benefit financially from landscaped developments as large trees, shrubs, and other landscape materials add value to a property. In new developments, trees and other landscaping materials temper the development's newness, add character, and perhaps most importantly, contribute to a sense of place. This is especially true if existing native trees, large shrubs, and other native plants can be preserved on a site or transplanted back into a development.

Table 10-50.60.010.A: Benefits of Sustainable Landscaping	
Glare Reduction	Landscaping is helpful to reduce reflection or glare from the sun, outdoor lights, or vehicle headlights.
Heat Island Reduction	Increasing vegetative cover and installing green roofs reduces heat islands by lowering surface and air temperatures with shade and evapotranspiration.
Low Impact Development	Low impact development measures mimic a site's predevelopment hydrology by using design practices and techniques that effectively capture, filter, store, evaporate, detain, and infiltrate runoff close to its source.
Native Vegetation	Preserving and introducing native vegetation on a development site is essential to a sustainable landscape because native vegetation: • Has a high survival rate; • Is already established and needs no additional soil amendments; • Requires less maintenance than non-native plants; • Is drought tolerant, hardy when planted at the correct elevation, and requires little or no supplemental irrigation once established; • Has a better root to leaf ratio; • Requires fewer or no pesticides to maintain than non-native plants; and • Provides food and shelter for wildlife and attracts a diversity of bird species and other wildlife.
Noise Reduction	Strategically placed shrubs, ground covers, and trees may reduce noise levels as sound energy is absorbed or dispersed.
Screening	Plants can be used to screen incompatible adjacent uses or above ground and on-site utilities.
Softening the Built Environment	Landscaping can add unique features and a human scale to large structures and can enhance the sense of entry into a building or courtyard.
Storm Water Management	Landscape vegetation reduces the amount and rate of storm water runoff, improving storm water runoff quality, and increases the capacity for groundwater recharge.
Visual Benefits	• Plants add visual interest and variety, especially if used to add seasonal color and texture; • Foundation plantings help frame a building and visually anchor it to the site; and • A variety of plants, selected for their colors, textures, sizes and shapes, should unify and add interest to the overall landscape. The variety can create movement and contribute to the visual balance.
Visual Continuity	Landscaping can unify and organize disparate site or streetscape elements by creating visual continuity.
Non-quantifiable Benefits	Landscaping's benefits extend beyond measurable economic or physical qualities. Plants possess a special ability to set a mood and can affect people's emotions and their enjoyment of their surroundings. Plants create serenity, more peaceful places, and better looking or feeling developments.

C. **Xeriscape Landscaping**

1. Applying xeriscape landscaping is directly linked to the concept of sustainable landscaping. The water-use standards for landscaping in this Division create the framework for xeriscape landscapes.

2. Xeriscape landscaping incorporates water-conserving designs that take into account soil and drainage factors, microclimates, grouping of plants with similar water requirements, efficient irrigation systems, native vegetation, paving permeability, and low-water-using and drought tolerant vegetation. Xeriscape landscaping is not cactus, rocks and gravel, nor shall "xeri" be interpreted to mean zero.

3. The xeriscape principles in Table B (Xeriscape Principles), apply to all landscaping areas as required by Section 10-50.60.020 (Applicability).

Table 10-50.60.010.B: Xeriscape Principles

Good Landscape Planning and Design	Careful consideration of a site's size and shape, soil type, topography, and building configuration is essential in developing a good landscape plan. The function of the space (i.e. its use), the amount of available sun, location of views, regional and microclimate conditions, and a preliminary assessment of landscape watering zones should also be taken into account in early planning of a xeriscape landscape.
Use of Drought Tolerant and Low Water-use Plants	Primarily drought tolerant and low water use plants shall be used. These plants can serve nearly every function. Some provide shade and texture, while others are appropriate for borders, accent areas, seasonal color, and year round greenery. Native wildflowers and grasses are typically suitable for revegetating disturbed areas.
Appropriate Lawn Areas	Lawns require a lot of water to stay green and healthy. Lawns shall only be located in areas where they provide functional benefits. Lawn areas planted close to a building may provide a cooling effect. Lawns should not be planted in odd shaped areas that cannot be watered efficiently. Lawn areas can often be planted with modern, low-water-use, drought-tolerant grasses (Refer to Appendix 3 (City of Flagstaff Landscape Plant List)).
Efficient Irrigation	Install irrigation systems so that they provide an adequate amount of water at the proper time to the root zone of plants. Each plant and vegetative type has its own water needs, and the planting arrangement and irrigation system should be designed to reflect those needs. Moisture sensors shall be installed on irrigation controls to measure real time soil moisture. Each water use zone should be on a different valve. Additionally, stormwater runoff should be routed into each area to offset irrigation needs.
Soil Improvement	Organic matter should be added to existing soils to increase water-holding capacity and provide beneficial nutrients to plants. In low water-use zones, loosening the soil may be all that is needed.

Use of Mulches	Organic mulches consisting of wood, bark chips, and plant remnants are preferable, as they are able to hold moisture, cool the surface of the ground, reduce weed growth, slow erosion, and improve the existing soil as they decompose. Inorganic mulches consisting of rock or stone help slow erosion, but do not lower the soil temperature.
Appropriate Maintenance	Xeriscape landscapes require low maintenance, but not no maintenance. To be effective, a xeriscape landscape must be monitored with a program of pruning, weed control, pest control, and irrigation system adjustments.

10-50.60.020 Applicability

The provisions of this Division shall apply to new and existing development as follows. Exceptions are provided in Subsection C.

A. **New Developments**
All new nonresidential and residential developments shall provide landscaping in compliance with this Division.

B. **Existing Development**
A single addition or cumulative additions subsequent to May 7, 1992, that meet the following thresholds, shall, to the maximum extent feasible as determined by the Director, provide landscaping in compliance with this Division. Where existing site conditions may make it difficult to achieve full compliance as otherwise required below and to ensure that as much as feasible the business expansion is successful, landscaping standards may be modified in accordance with Section 10-20.40.090 (Minor Modifications to Development Approvals).

1. An expansion or alteration of an existing nonresidential or residential use that results in a 35 percent or more increase in dwelling units, gross floor area, seating capacity, or parking spaces, either with a single or cumulative addition(s) or expansion(s).

2. Change or intensification of a use that increases the required parking by 35 percent or more. If the required additional parking is less than 35 percent, then landscaping is only required for the new parking spaces in compliance with Section 10-50.60.050 (Landscaping Standards).

3. Developments or uses requiring a Conditional Use Permit to the maximum extent feasible as determined by the Planning Commission.

C. **Exceptions**
The provisions of this Division do not apply to the following:

1. Construction of a new single-family dwelling or of an addition or alteration to an existing single-family dwelling.

2. Single-family detached residences, whether on existing lots in existing single-family subdivisions or in new subdivisions where the landscaping installation and maintenance has been assured as part of a subdivision plat approved in compliance with this Zoning Code.

3. Single-family cluster dwelling residences in the RR and ER Zones.

4. Secondary single-family detached dwellings on the same lot as the primary dwelling, where permitted.

5. Accessory dwelling units.

D. **Landscaping in Rights-of-Way**
Landscaping in rights-of-way shall comply with the landscaping and plant location requirements found in the *Engineering Standards*, Title 18 (Landscaping Standards for Rights-of-Way).

10-50.60.030 Landscaping Plans

A. **Preliminary Landscape Plan**

1. A preliminary landscape plan shall be submitted for review and approval by the Director at the same time as the concept plan is submitted in compliance with Section 10-20.30.050 (Concept Plan Review).

2. The preliminary landscape plan shall contain the location, description, proposed low impact design measures, and number of proposed materials, including new and existing ground covers, shrubs, and trees, and a brief description of the planting and design actions that are intended to meet the requirements of Section 10-50.60.070 (Water Use and Irrigation).

B. **Final Landscape Plan**
A final landscape plan shall be submitted as part of the application for Site Plan Review and Approval (Section 10-20.40.140). A final landscape plan shall be approved by the Director before the issuance of a Building Permit, grading, or other construction.

C. **Content and Preparation of the Final Landscape Plan**
Final landscape plans shall contain the following information:

1. Development name, site address, and Assessor's Parcel Number;

2. Case number for developments subject to development review at a public hearing;

3. Designer name, address, phone number, and registration stamp or qualification statement;

4. Scale (bar and numerical) and north arrow. Show landscape in sufficient detail to be legible. The landscape plan shall be drawn at the same scale as the site plans and/or engineering drawings to the maximum extent feasible;

5. Property lines, adjacent rights-of-way, building footprints, the edge of all eaves, roof overhangs and cantilevered structures, parking lots, fences, driveways, intersection sight triangles, walkways, easements, utility lines, poles and boxes, drainage structures, and other site improvements. All shall be drawn to scale with appropriate dimensions and labeled as existing or proposed;

6. Existing and proposed contours based on the proposed grading plan. Contour intervals of one-foot are preferred, but a maximum of two-foot contour intervals will be accepted. Exceptions to contours may be made based on site size or if other circumstances require a different interval, as approved by the Director. In addition to contours, spot elevations based on the proposed grading plan shall be added to identify proposed changes in grade;

7. Significant topographical features on the site, such as drainages and rock outcroppings;

8. Existing native vegetation on the site indicating native vegetation to be preserved and protected, or removed. Native vegetation must be identified by location, size, and common and botanical name;

9. The direction of runoff flows with the use of flow arrows and the use of runoff including, but not limited to:

    a. Collected runoff from individual catch basins around single trees, and

    b. Collected runoff from basins accepting flow from an entire vehicular use area or roof area;

10. Cut and fill areas and areas of the site disturbed by construction activity;

11. Plant locations and spacing (including staking and soil mix), represented at approximate size at maturity, corresponding to the plant legend;

12. A plant legend that includes both common and botanical plant names, sizes (i.e. height, trunk diameter, and size or diameter of plant at maturity), and the number of required and proposed trees, shrubs, and ground cover quantities;

13. Calculations of the total landscape area and plant quantities, including hydrozones, proposed turf areas, and other oasis areas;

14. Location and areas of active and passive rainwater harvesting systems as required in the *Stormwater Regulations* with a description of the type of measure;

15. Irrigation design plan identifying system layout and descriptions (e.g., automatic timing devices, backflow protection, moisture sensors, hydrants, sprinkler and bubbler details, drip system layout and specifications, and, seasonal irrigation schedule);

16. If applicable, delineation of an on-site nursery for short-term storage of native vegetation to be transplanted;

17. If applicable, indications of proposed common and open space areas on the plan; and

18. If a development is developed in phases, required landscaping must be completed in sequence with development phases. These phases must be shown on the landscape plan.

D. **Preparation by Qualified Professional**
Final landscape plans shall be prepared by a qualified landscape architect, licensed landscape contractor, certified nurseryman or other professional determined by the Director to be qualified, based on applicant's ability to demonstrate compliance with this Zoning Code.

E. **Review and Approval**

1. The Director shall review each preliminary and final landscape plan to verify its compliance with the provisions of this Division. The Director may approve, deny, or require changes to the landscape plan if it is not in compliance.

2. In the review of a final landscape plan the standards provided in Subsection C, above, shall be considered minimum requirements. Provided that the purposes of this Division are still achieved, written requests for alternative landscaping schemes may be submitted to the Director and may be justified only when one or more of the following conditions apply:

   a. The site has space limitations or an unusual shape;

   b. Topography, soil, or other site conditions are such that full compliance is impossible or impractical;

   c. It can be demonstrated that the alternative proposal will result in better environmental or aesthetic quality and conditions; or

   d. Safety considerations are involved and no other alternative exists to reduce potential hazards.

3. Revisions to overall development plans or plats may require commensurate revisions to landscape plans to the satisfaction of the Director.

4. The Director may authorize minor changes to an approved landscape plan in compliance with Section 10-20.40.090 (Minor Modifications to Development Standards).

F. **Construction Assurances**
If approved landscaping and watering systems cannot be installed prior to issuance of a Certificate of Occupancy or commencement of the use of a property, a Conditional Certificate of Occupancy may be issued in accordance with Section 10-20.40.030 (Building Permits and Certificates of Occupancy).

G. **Inspection Required**

1. Prior to issuing a Certificate of Occupancy, the Director shall inspect the subject property to ensure that the landscaping has been installed in compliance with the approved landscape plans.

2. If the inspection determines that there are changes to the final landscape plan, the Director may approve an as-built landscaping plan that reflects all changes if the Director determines that the intent of this Division is achieved.

10-50.60.040 Landscape Location Requirements

Landscaping shall be provided in all areas of a site that are subject to development with structures, grading, or the removal of natural vegetation, as identified in this Section. Table A (Application of Landscaping Location Requirements in Zones) provides a summary of applicability and identifies exceptions to areas within transect zones.

Table 10-50.60.040.A: Application of Landscaping Location Requirements in Zones							
	Non-Transect Zones	Transect Zones					
		T1	T2	T3	T4	T5	T6
Residential Zone Buffers	✓	×	×	✓	✓	×	×
Non-Residential Zone Buffers							
Street Buffer	✓	×	×	×	×	×	×
Peripheral Buffers		×	×	×	×	×	×
Parking Areas	✓	×	✓	✓	✓	✓	×
Other Landscaped Areas	✓	×	✓	✓	×	×	×
Key							

✓ = Required

× = Not Required

A. **Residential Zone Buffers**

1. Residential uses subject to the provisions of this Division shall provide landscaping in setbacks, utility easements, and drainage courses, (but no trees shall be planted in utility easements and drainage courses) in compliance with Section 10-50.60.050 (Landscaping Standards), except where:

   a. They are occupied by approved structures, paving, decks, or patios;

   b. They are retained in their natural state, and the Director determines that landscaping is not necessary to achieve the purposes of this Division;

   c. Landscaping would conflict with access to utility infrastructure, however landscaping shall be maintained to the maximum extent feasible; or

   d. For stabilization purposes, these areas are seeded in compliance with Subsections C and D below.

2. Parking areas shall be landscaped and unused areas shall be seeded in compliance with Subsections C and D below.

3. Landscaping standards in affordable housing developments may be reduced in compliance with Division 10-30.20 (Affordable Housing Incentives).

B. **Non-Residential Zone Buffers**
Landscaping shall be applied through landscaping buffers in non-residential zones. There are two types of non-residential landscaping buffers: street

buffers and peripheral buffers. These buffers shall be landscaped in compliance with Section 10-50.60.050 (Landscaping Standards).

1. **Street Buffers**
   A landscaped street buffer with a minimum width of 10 feet is required along the street frontage of a site as measured from the street property line (see Figure A), except:

   a. Street buffers fronting streets with two traffic lanes may be reduced to five feet. If the street buffer is reduced to five feet adjacent to industrial uses or heavy retail/services uses, a six-foot fence shall be located behind the buffer in compliance with Division 10-50.50 (Fences and Screening). Refer to Figure A for an illustration.

   b. The City Engineer may approve the placement of up to five feet of the required 10-foot width of required landscaping within the adjacent right-of-way.

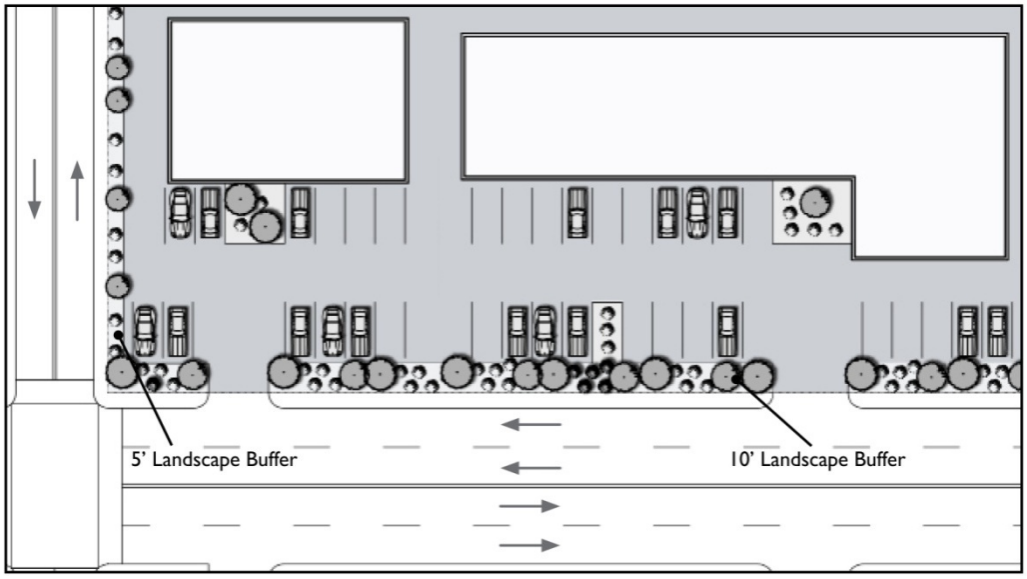

Figure A. Street Buffer

2. **Peripheral Buffers**
   Landscaped peripheral buffers (see Figure B) shall be located along the outer perimeter of a lot or parcel (i.e. property lines adjacent to other parcels) and shall be provided as determined in Table B (Buffer and Screening Requirements), which ranks land uses and zones based upon their land use intensity and the impact a use will have on adjacent land uses, except:

a. Where an area 10 feet or more in width has been set aside in compliance with Resource Protection Standards (Division 10-50.90);

b. Between adjacent sites with shared parking;

c. Where common driveways or vehicular access easements are located on the property line;

d. Where an alley, storm water drainage, or other right-of-way 10 feet or more in width physically separates the site from an adjacent property;

e. Where the peripheral buffer requirement conflicts with access to utility infrastructure, the landscaping requirements may be reduced if required to provide safe access or limit damages to the infrastructure; and

f. Stormwater management facilities may be incorporated into the peripheral buffers if they are designed in compliance with Section 10-50.60.060.F, or in compliance with the *Stormwater Regulations*.

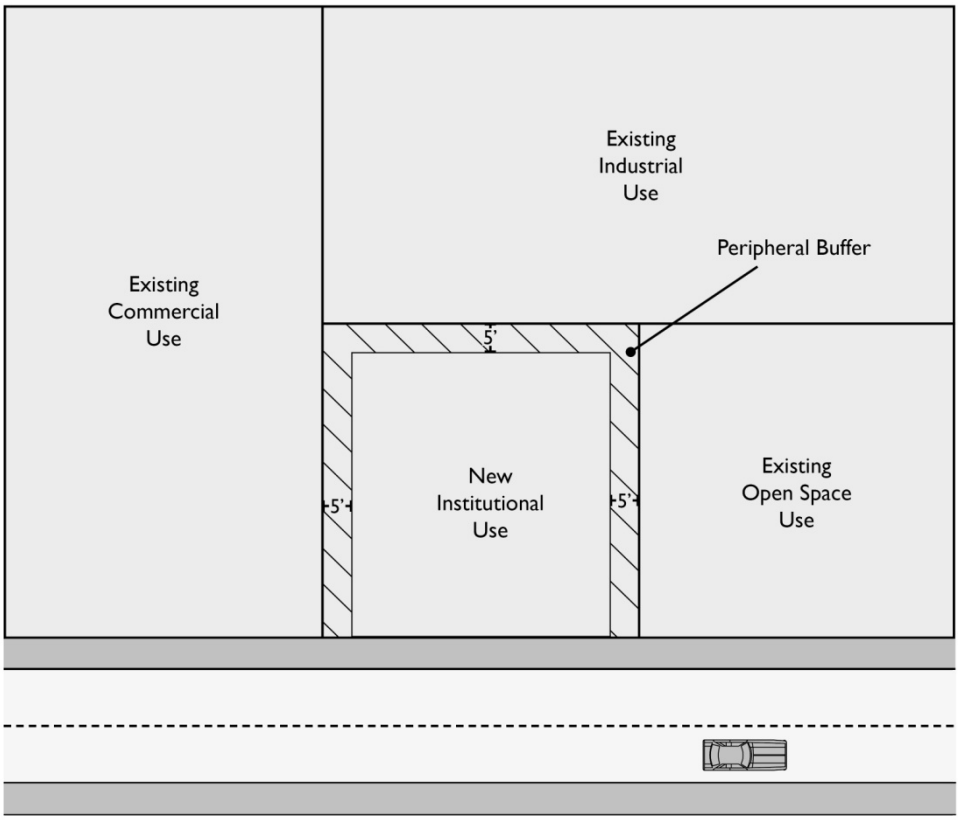

Figure B. Peripheral Buffer

Table 10-50.60.040.B: Buffer and Screening Requirement

Proposed Use Category[1,4]	Peripheral Buffer Requirement Based on Adjacent Existing Uses or Zone[2]			
	Commercial	Industrial	Resources/ Open Space	Residential
Business Park	15' wide buffer	--	15' wide buffer	15' wide buffer
Industrial, Manufacturing, Processing & Wholesaling	5' wide buffer	--	10' wide buffer	15' wide buffer
Institutional	5' wide buffer	5' wide buffer	5' wide buffer	10' wide buffer
Ranching, Forestry & Resource Use	--	--	--	--
Recreation, Education & Public Assembly	10' wide buffer	10' wide buffer	5' wide buffer	15' wide buffer
Residential	15' wide buffer	15' wide buffer	10' wide buffer	--
Retail Trade	--	5' wide buffer	5' wide buffer	15' wide buffer
Services – General	--	5' wide buffer	10' wide buffer	15' wide buffer
Transportation & Infrastructure[3]	5' wide buffer	5' wide buffer	10' wide buffer	15' wide buffer
Urban Agriculture	5' wide buffer	5' wide buffer	5' wide buffer	5' wide buffer

End Notes

[1] Use categories are based on the land use categories in the land use tables in Chapter 10-40 (Specific to Zones).

[2] Buffer and screening requirements shall be based on adjacent existing uses. If adjacent sites are vacant, requirements are based on the underlying zone.

[3] With the exception of parking facilities, which are addressed in Subsection C.

[4] Parking areas for all uses adjacent to residential uses shall be screened by a solid fence or wall a minimum of 6 feet in height or a 10-foot wide buffer, to the maximum extent feasible.

C. **Parking Area Landscape Standards - Residential and Non-Residential**
Surface parking areas in all zones shall be landscaped in compliance with this Section. Perimeter and street frontage landscaping is regulated in compliance with Subsections A and B above.

Table 10-50.60.040.C: Interior Landscaped Area Required per Number of Off-street Parking Spaces	
Parking Spaces Required	**Minimum Interior Landscaped Area Required**
All Uses (excluding agriculture)	
0 - 7 single loaded spaces 0 - 14 double loaded spaces	None
8 + single loaded spaces 16 + double loaded spaces	30 sf per space[1]

End Notes

[1] For Suburban Commercial (SC) and Research and Development (RD) Zones, 40 sf per space is required.

1. **Amount of Parking Area Landscaping**

   a. Parking area landscaping area shall be required based on the number of off-street parking spaces in compliance with Table C (Interior Landscaped Area Required per Number of Off-street Parking Spaces).

   b. Display or storage of equipment or vehicles is not permitted in required landscaped areas.

2. **Interior Parking Area - Landscape Location Requirements**
   Interior parking area includes planter areas between parallel rows of parking spaces, terminal islands, and landscape areas between rows of parking spaces. Where required by Table C (Interior Landscaped Area Required per Number of Off-street Parking Spaces), interior parking area landscaping shall meet the following requirements:

   a. **Landscape Islands**
   For parking lots with eight or more spaces, the required interior parking area landscaping shall be installed in islands separating adjacent parking spaces or in peninsulas parallel to individual parking spaces (see Figure C).

   b. **Terminal Islands**
   All rows of parking spaces shall have a terminal island no less than five-feet in width to protect parked vehicles, confine moving traffic to aisles and driveways, and provide space for landscaping (see Figure C).

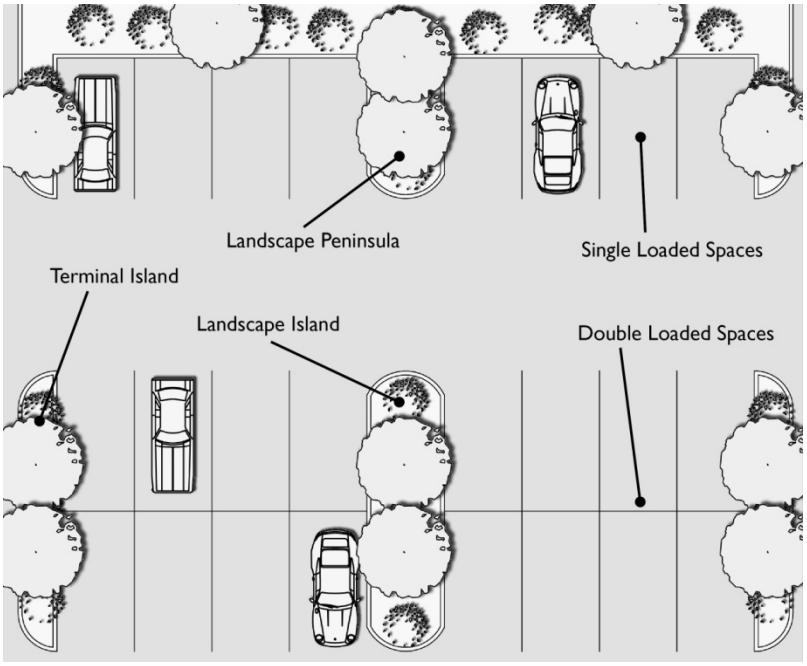

Figure C. Interior Parking Area – Landscape Location Requirements

c. **Interior Parking Area - Landscaping Amount**
Planter areas between parallel rows of parking spaces, terminal islands, and islands separating adjacent parking areas shall have a minimum of two 15-gallon trees and two shrubs or two groundcovers, in compliance with Section 10-50.60.050.B, for every eight parking spaces. Groundcover should cover areas between shrubs based on shrub size at maturity (see Table 10-50.60.050.B (Plant Sizes)).

d. **Exception for Solar Collectors**
For the portion of a parking area over which photo-voltaic solar collectors are installed where they also function as shade structures, the minimum requirement for trees shall be waived, and a minimum of three shrubs and three groundcovers shall be planted in compliance with Section 10-50.60.050.B for every eight parking spaces.

3. **Screening Parking Areas**

a. In addition to Subsection 1, planting and screening along the boundaries of parking areas that are adjacent to a street shall be used to break up continuous parking areas by providing color and interest through the use of appropriate landscape materials and through the preservation of existing vegetation.

b. Landscape screening along the perimeter of parking areas shall be a minimum of three and one-half feet in height. One of the following methods of forming a screen along the full length of the parking area

located adjacent to a street shall be used, except where breaks are needed to provide access for pedestrians, bicycles, vehicles, or a required clear view zone (Refer to *Engineering Standards*, Title 10, Section 10-06-020 (Intersection Sight Triangles, Clear View Zones)). Figure D illustrates the methods for screening parking.

(1) Solid fencing or wall meeting the requirements of Division 10-50.50 (Fences and Screening).

(2) Shrubs planted at sufficient density to form a significant screen within three years of initial planting. Refer to Table 10-50.60.050.A (Required Plant Quantities) and 10-50.60.050.B (Plant Sizes) for required plant size and quantities for parking lot screening.

(3) Any combination of the above.

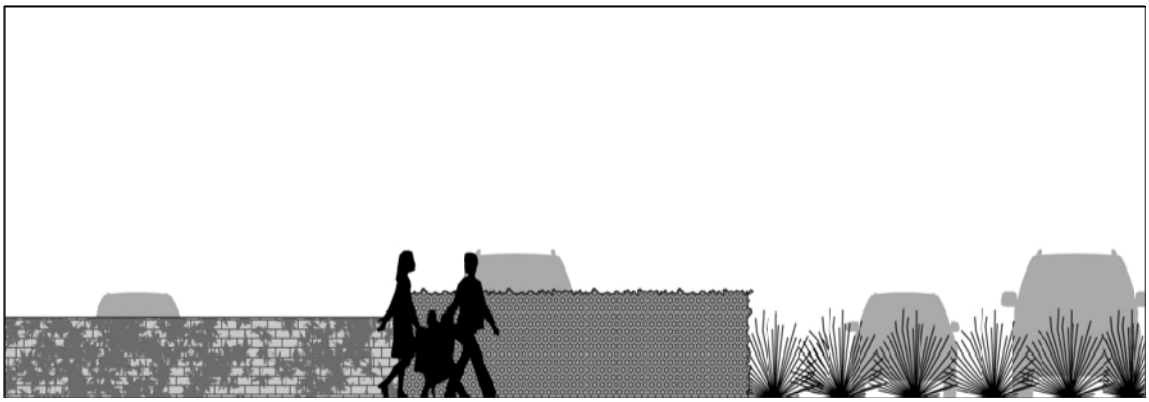

Figure D. Screening of Parking Areas

4. **Landscaping Materials**
Landscaping shall be a combination of ground cover, shrubs, and trees. (See Section 10-50.60.050 (Landscaping Standards)).

5. **Plant Protection**
Landscape areas susceptible to damage by vehicular or pedestrian traffic must be protected by appropriate means, such as curbs, bollards or low walls provided they are not in conflict with applicable standards for intersection sight triangles as established in the *Engineering Standards*.

D. **Other Landscape Areas - Residential and Non-Residential**
All other areas of the site not specifically addressed in this Section shall be landscaped. This includes all other parts of a site not devoted to decks, patios, structures, driveway and/or parking improvements, lighting, sidewalks, signs, solid waste/recyclable materials collection and storage, and similar improvements. The minimum standards required for other landscape areas shall be in compliance with Section 10-50.60.050 (Landscaping Standards). This Subsection applies to non-residential and residential uses subject to the provisions of this Division.

1. **Unused Areas**
   In all zones, any area of a development site not intended for a specific use, including a commercial pad site intended for future development, shall be seeded in accordance with Title 17 of the *Engineering Standards*, unless retained in its natural state, and the Director determines that landscaping is not necessary to achieve the purposes of this Division.

2. **Landscaping Around Buildings**
   Landscaping areas shall be planted and maintained within 25 feet around buildings (i.e. foundation planting).

E. **Solar Access**
   No tree or shrub planted after the effective date shall be placed so as to cast a shadow on more than 10 percent of the surface of a solar collector on the property of another at any one time between the hours of 10:00 a.m. and 2:00 p.m. local standard time.

10-50.60.050 Landscaping Standards

The following standards apply to all landscaping areas unless otherwise noted.

A. **Landscape Design**

1. **Plant Material Considerations**
   Plant materials shall be selected from the City of Flagstaff Landscape Plant List (Refer to Appendix 3) taking into account site specific constraints, such as:

   a. Water demand, drought tolerance, appropriateness of native and naturalized species, and geological and topographical conditions;

   b. Color, form, texture, and seasonal characteristics relative to the overall development design;

   c. Soil retention capability in compliance with the xeriscape landscaping principles described in Section 10-50.60.060 (Water Use and Irrigation);

   d. Grouping plants that have similar water use together in distinct hydrozones, including using edible landscaping in compliance with hydrozone standards, (see Section 10-50.60.060.A);

   e. The protection and preservation of native species, appropriate naturalized species, and natural areas;

   f. Using high maintenance plants only for accents; and

g. Existing trees preserved on a development site where the area under the canopy remains relatively undisturbed may be credited toward landscape tree requirements, subject to the following standards:

(1) Each existing tree that is a minimum of six inches in diameter at breast height (DBH) or 10 feet in height or larger may substitute for the requirement of two evergreen landscape trees.

(2) For each existing tree retained in a landscape area, the requirement for shrubs and groundcovers associated with that tree will be waived.

2. **LID (Low Impact Development)**
All landscaping areas that are an integral part of the stormwater management system shall be designed in compliance with the *Stormwater Regulations* and *LID Manual*.

B. **Plant Material - Quantities and Placement**

Landscape plans shall include trees, shrubs, and groundcover that shall be selected and installed in compliance with Section 10-50.60.070 (Water Use and Irrigation) and as follows:

1. **Required Plant Quantities and Size**

a. Landscape areas shall be planted in compliance with Table A (Required Plant Quantities).

Table 10-50.60.050.A: Required Plant Quantities			
Landscape Area	**Trees (On Average)**	**Shrubs[1,2] (On Average)**	**Groundcover (On Average)**
Street Buffer (Ind. And Business Park Zones)	1per 15 linear feet	3 per tree	2 per tree
Street Buffer (All other Zones)	1 per 25 linear feet	2 per tree	2 per tree
Peripheral Buffer	1 per 25 linear feet	2 per tree	2 per tree
Parking Area[4]	2 per 8 parking spaces	2 per tree	2 per tree
Parking Lot Screening	Not Required	2 shrubs per parking space adjacent to a street to achieve 80% visual screening[3] Min. Height: 3½ feet	
Building Foundation	1 per 25 linear feet	2 per tree	2 per tree
Unused Areas	Disturbed, unused areas are to be seeded in accordance with *Engineering Standards* (Title 17)		

End Notes

[1] Two one-gallon groundcover plants may be substituted for one required five gallon shrub, unless the shrubs are required for a street buffer or for parking lot screening.

[2] Two one-gallon native shrubs may be substituted for one five-gallon shrub.

[3] A solid fence or wall designed and constructed in accordance with Division 10-50.50 (Fences and Screening Standards) may be substituted for required shrubs, or a combination of fencing/wall and shrubs may be substituted.

[4] In the SC commercial zone, 3 trees per 8 parking spaces shall be required.

b. Plant materials shall be sized and spaced to achieve immediate effect according to Table B (Plant Sizes).

Table 10-50.60.050.B: Plant Sizes		
		Minimum Planting Required
Trees	Non-native Trees	Trees shall be 6' tall or 2" caliper
	Native Trees	15-gallon containers
Shrubs	Non-native Shrubs	5-gallon containers
	Native Shrubs	1-gallon containers
Groundcover		1-gallon containers

2. **Trees**
   Tree planting shall comply with the following standards:

   a. Trees may be planted at varying distances apart to create more natural landscape designs provided that the tree per linear foot requirement established in Table A (Required Plant Quantities) is applied as an average;

   b. A required landscape area that is between 15 and 25 linear feet long shall contain a minimum of one overstory tree;

   c. The spacing of trees within landscape areas such as peripheral buffers shall be adjusted to allow solar access to existing solar collectors on adjoining property;

   d. Trees shall not be planted under any structure that may interfere with normal tree growth (e.g., an eave, overhang, balcony, light standard, overhead utility line or other similar structure);

   e. Trees planted near structural improvements such as sidewalks or curbs shall be planted at a sufficient distance from the structural improvement to prevent upheaval or soil settling. Where the distance is not available or where the design places the trees closer to the improvement, suitable root system barriers to prevent upheaval or soil settling shall be installed. If the trees are in the public right-of-way, the City Engineer shall approve the root barriers;

   f. Trees shall be staked when planted; and

   g. No trees shall be planted within utility easements or natural drainage courses.

3. **Shrubs, Groundcover and Mulch**
   Groundcover, shrubs, and mulch shall meet the following standards:

   a. The landscaped areas must be covered in compliance with Table A (Required Plant Quantities) with trees, shrubs, or vegetative ground cover at plant maturity. Plant maturity is based on three-years growth for shrubs and one-year growth for groundcover;

   b. Shrubs, groundcover, or other types of plants with similar water requirements should be grouped to achieve the required vegetation coverage as long as they do not conflict with other standards in this Subsection;

   c. Shrubs, groundcover, or other types of plants shall be predominantly naturalized, drought tolerant, and incorporated into the landscape area based on the hydrozone in compliance with Section 10-50.60.060.A;

d. Shrubs or groundcover planted adjacent to a walkway, driveway, sidewalk, or street shall be placed with the plant center at a distance equal to or greater than one-half the normal width of the plant at maturity;

e. Artificial shrubs shall not be allowed. Artificial turf may be installed provided it has a permeable base. Any artificial turf area shall not count as required landscape area, and shall not exceed the area allocated for an oasis as defined in Subsection C, below;

f. Nonturf areas (e.g., shrub beds) shall be top dressed with mulch or approved alternative and supplemented and replaced as needed; and

g. Organic mulch (i.e. hard wood mulch, bark chips, and plant remnants) shall be encouraged over the use of inorganic mulch (i.e. crushed rock, pebbles, and stone). Only landscape cloth shall be placed under mulch layers. Impermeable membranes made of plastic or a similar material, are not permitted.

4. **Planter Width Appropriateness**
When plants are intended for screening purposes, an adequate width of planter area shall be provided for the plants to grow and develop as intended.

C. **Oasis Allowance**
An oasis (See Section 10-50.60.060.A.1) is an area where turf, non-drought tolerant plants, and vegetable gardens are permitted. Plants not listed on the City of Flagstaff Landscape Plant List (Refer to Appendix 3) may be used in an oasis if the plants are grouped in separately programmed irrigation areas according to their water requirements. An oasis area is not required, and neither is it encouraged, but it is permitted. The location and maximum area on a site that may be used for oasis areas, including those located in a street buffer, are determined as follows:

1. **Residential Uses**
For multifamily residential uses, an oasis allowance of up to five percent of the total site area or 100 square feet per dwelling unit, whichever is greater, is permitted. Vegetable gardens are not included in the area calculation for an oasis.

2. **All Other Uses**
For all other uses, an oasis allowance equal to, but not more than, two and one-half percent of the site is permitted. Vegetable gardens are not included in the area calculation for an oasis.

3. **Location Standards**
The following standards shall be applied to determine the location of the oasis area:

a. The oasis is placed on the site near the main building(s) or assembly areas where pedestrian activities are designed to occur or in an active use area;

b. The oasis is designed for optimum exposure to onsite users;

c. The oasis is designed as part of an area used for seating, assembly, rest, or dining, or is designed to enhance a main entryway;

d. The oasis is located in an area of relatively low evaporation potential from wind and heat and is sheltered by walls, buildings, or tree stands;

e. The oasis is located in an area of common recreation and patio facilities in a multi-family development;

f. Any water harvesting system or other storm water runoff design is integrated with the oasis in compliance with the *Stormwater Regulations*; and

g. The oasis shall not be placed in the public right-of-way.

4. **Street Buffer**
Oasis areas may be located in the street buffer only if:

a. The oasis areas do not total more than five percent of the area of the street buffer; and

b. The non-drought tolerant plants used in the oasis area are flowering bedding plants used for seasonal color.

5. **Turf**
Turf areas are only allowed within an oasis according to the following:

a. Turf areas shall be located to mitigate glare and reduce heat near buildings and their openings, including windows and patios, or to serve as an active play area; and

b. Grasses selected for turf area shall have low water use characteristics and be drought resistant. A list of acceptable grasses is provided in the City of Flagstaff Landscape Plant List (Refer to Appendix 3). The Director may approve other grasses if it can be demonstrated that the proposed species is low water use and drought tolerant.

6. **Use of Edible Landscaping**
Edible landscape plant materials may be incorporated into required landscape areas provided they meet the intent and purpose of this Division. Areas dedicated to the production of food such as vegetable gardens shall not count as required landscape area.

7. **Exceptions**
   Oasis allowances (including turf) do not apply to:

   a. Public parks and botanical gardens;

   b. Outdoor recreation facilities, whether under public or private ownership, for public use, schools, day care centers;

   c. Playing areas of golf courses;

   d. Cemeteries; or

   e. Food production sites such as community gardens.

8. **Opportunity for Greater Oasis Allowance**
   The oasis area may be increased by 10 percent if an active rainwater harvesting system, with a minimum storage capacity of 1,000 gallons, is installed and stored water is used onsite, in compliance with storm water and runoff requirements in Subsection 10-50.60.060.D.

D. **Height Limits**
   Landscape materials located within the required clear view zone shall be selected, placed on a site and maintained in compliance with *Engineering Standards*, Title 10, Section 10-06-020 (Intersection Sight Triangles, Clear View Zones).

E. **Safety Requirements**
   Consideration for vehicular and pedestrian fire safety shall be incorporated into all landscape designs. At maturity, plant materials shall not:

   1. Constitute a driving hazard by interfering with safe sight distances for vehicular, bicycle or pedestrian traffic;

   2. Block pedestrian or bicycle ways;

   3. Excessively overshadow a vehicular use area with evergreen trees;

   4. Conflict with onsite or offsite overhead utility lines, utility easements, overhead lights, or walkway lights;

   5. Cause a fire due to proximity to buildings and roofs. The Flagstaff Fire Department shall be consulted, as necessary, to determine safe proximities of vegetation to buildings and roofs; or

   6. Cause damage and upheaval of sidewalks and pavement.

10-50.60.060 Hydrozones

The key to the establishment of xeriscape landscaping that conserves water is to arrange plants in appropriate locations and not to interplant them with others that have different (i.e. higher or lower) water requirements. This grouping of plants into "hydrozones" is based on their water needs, and allows them to be irrigated and maintained efficiently. In Flagstaff, up to three hydrozones are effective as show in Table A (Hydrozones) and defined in the following subsections.

All landscape plans shall identify the appropriate hydrozones located on site.

A. **Hydrozone 1**
Hydrozone 1, the oasis zone, is not required, and neither is it encouraged. In hydrozone 1 there are no restrictions on plant selection, and plants with high or moderate water use are permitted that require frequent watering, as well as native or naturalized plants that can also provide the lush green effect desired. If proposed, the oasis shall comply with the standards provided in Section 10-50.60.050.C. In the oasis area, turf areas are permitted. Due to the water intensive nature of hydrozone 1, passive rainwater harvesting techniques, and the use of greywater and reclaimed water from the City's reclaimed water lines (if available) shall be used to minimize the use of potable water whenever feasible. If an irrigation system is required for the maintenance of plants in this hydrozone, it shall be valved separately from plants in hydrozones 2 and 3 as the plants in the other zones will have different watering requirements. Permanent or temporary irrigation systems may be installed in compliance with Section 10-50.60.070 (Water Use and Irrigation).

B. **Hydrozone 2**
This is typically the transition zone between hydrozone 1 (oasis) and hydrozone 3 (native), although in more urban locations such as a commercial site with large parking facilities it may be the predominant hydrozone, in which case hydrozone 1 is not permitted. Plant selection for this hydrozone shall be from the City of Flagstaff Landscape Plant List (Appendix 3) and may be either naturalized plants or native plants, and shall have lower watering requirements than for the oasis zone. Plants in this zone require infrequent supplemental deep watering in addition to natural precipitation. Mulching, the use of active and passive rainwater harvesting systems, and other non-potable water sources with efficient low-volume irrigation systems, can be used to conserve water. If plants selected for hydrozone 2 have a different watering requirement from either hydrozone 1 or 3, then the irrigation system shall be valved separately. Permanent or temporary irrigation systems may be installed in compliance with Section 10-50.60.070 (Water Use and Irrigation).

C. **Hydrozone 3**
Hydrozone 3 is usually on the periphery of a development site adjacent to Hydrozone 2. Plant selection for this hydrozone shall be from the City of Flagstaff Landscape Plant List (Appendix 3) and includes those with the

greatest drought tolerance, and thus require little, if any, supplemental water once established, except perhaps in times of drought. This includes native plants, native vegetation preserved on site, and low-water use naturalized plants. Plants in this hydrozone, if selected with care and in conjunction with water harvesting, may be able to survive without irrigation once established. Mulching, the use of active and passive rainwater harvesting systems, and other non-potable water sources with efficient low-volume irrigation systems and may be used to ensure that plants survive dry periods. Permanent or temporary irrigation systems may be installed in compliance with Section 10-50.60.070 (Water Use and Irrigation).

Table 10-50.60.060.A: Hydrozones

Hydrozone		Plant Selection
Hydrozone 1	Oasis Zone	No restrictions on the plants selected, in compliance with Section 10-50.60.050.C
Hydrozone 2	Transition Zone	Plants/Vegetation with low watering requirements (Naturalized and native plants)
Hydrozone 3	Native Zone	Plants/Vegetation with very low watering requirements (Predominantly[1] native plants and native vegetation)

End Notes

[1]A minimum of 80% of the plant selection is comprised of natives and the remaining may be naturalized plants and vegetation.

10-50.60.070 Water Use and Irrigation

A. **General Water Use and Irrigation Standards**

1. Harvested rainwater (active and passive), greywater, or reclaimed water (if available to the site) shall be used to minimize the use of potable water whenever feasible. Applicants shall demonstrate that implementation of alternative water resources is not feasible or restricted by this Code if potable water is proposed to be used for landscape irrigation.

2. All irrigation demands shall be minimized through drought tolerant plant selection and appropriately timed application schedules. The landscape plan shall demonstrate water conservation efforts regardless of the source of the water used for irrigation.

3. Turf areas used for parks, playing areas or sports fields shall be irrigated by harvested rainwater, greywater or reclaimed water, unless it is not available, in which case the use of potable water is allowed.

4. The installation of permanent irrigation systems (See Subsection C. below) in any hydrozone is permitted, but is not required. However, it shall be the responsibility of the applicant, lessee, heirs, assigns, agent, homeowners' association, or other liable entity of the property to ensure that the landscaping is effectively maintained and irrigated as necessary (Refer to Section 10-50.60.080 (Maintenance)). The goal is to ensure that all landscape areas are kept alive with a minimum of water especially after the plants are established in which case (depending on the plant species) watering needs may be reduced except in exceptionally dry or windy conditions.

5. Temporary irrigation systems are appropriate in all hydrozones, and especially in hydrozone 3. If a temporary irrigation system is utilized, it should be in place for at least three summer growing seasons to ensure that the plants are established. Supplementary irrigation or watering may be necessary especially in unusually dry or windy conditions.

6. If approved landscaping and watering devices cannot be installed prior to occupancy or commencement of operations, a Conditional Certificate of Occupancy may be issued by the City. In addition to the requirements of Section 10-20.40.030 (Building Permits and Certificates of Occupancy), an applicant shall provide an acceptable form of surety for 120 percent of the estimated cost, accompanied by two or three estimates of the total cost of the approved landscaping and watering system improvements.

B. **Use of Reclaimed Water**

1. Sites located adjacent to reclaimed water lines (i.e. the reclaim water line is located in the public right-of-way and next to the site) shall be required to connect to the lines and utilize reclaimed water for the primary water source for irrigation in areas appropriate for direct reuse.

2. Prior to development plan approval or the issuance of a building permit, the Flagstaff Utilities Division will review the landscape plan for compliance with Arizona Administrative Code Title 18, Chapter 9, Article 7 (Direct Reuse of Reclaimed Water).

3. Reclaimed water shall not be used in areas designated for edible landscaping or community gardens.

4. Precautionary signage consistent with the applicable ADEQ and City standards shall be required where reclaimed water is applied.

C. **Irrigation System Specifications**

1. Permanent drip-irrigation or low-flow bubbler irrigation systems, or other low-tech watering systems, shall be designed, installed and maintained to minimize water use and soil evaporation and prevent water from being wasted through inappropriate application techniques.

2. If potable water is used for permanent irrigation systems:

    a. These systems shall utilize rain/moisture sensors to minimize the use of applied water;

    b. Drip irrigation shall be used for all single-planted landscaping, with emitters rated for no more than four gallons per hour (GPH); and,

    c. Microsprinklers rated for no more than 45 GPH may be used for large carpeted plantings.

3. Irrigation systems shall include an automatic timing controller for landscaping areas greater than one half acre. However, once plants have become established after three summer growing seasons, automatic timers may be turned off to ensure that water is conserved and landscape areas are not overwatered. Hand watering is permitted in landscaping areas less than one half acre.

4. Rigid irrigation pipes and flexible drip system irrigation lines placed under paved areas shall be contained in pipe sleeves.

5. Pipes or lines carrying water under constant and intermittent pressure shall be buried to the City's standard depth for all irrigation systems of 12 to 18 inches.

6. Non-pressurized PVC and polyethylene lines shall be buried to a minimum depth of 12-inches.

7. Lawn, shrub and bubbler heads closer than 12-inches to any paved surface shall be pop-up heads.

8. Spray irrigation systems shall only be used in Hydrozone 1 (oasis) for turf areas.

9. Temporary irrigation systems may be used in Hydrozones 2 and 3, and are not required to be buried. Temporary spray irrigation systems may be used to establish hydro-seeded vegetation and to provide water to existing native vegetation preserved on a site to ensure its survival after construction has been completed.

D. **Stormwater Runoff and Water Harvesting**

1. **Low Impact Development Integration**
Low impact development site design techniques and integrated management practices shall be used to comply with the *Stormwater Regulations* on sites that also are required to provide storm water detention.

2. **Detention/Extended Detention Basins**

   a. All above ground detention/extended detention basins shall be treated with a native ground cover seed mix. Where detention basins are in high visibility areas, they shall be shaped and landscaped to provide the natural appearance of the basin, including shrubs and groundcover.

   b. Where detention basins are constructed partially or entirely within buffers or other high-visibility areas on sites:

      (1) Detention basin must be adequately landscaped to meet the requirements of the landscape area in compliance with Section 10-50.60.050 (Landscaping Standards);

      (2) All surfaces shall be treated with a native groundcover seed mix, and the design of such basins shall be incorporated into the site plan; and

      (3) No trees shall be planted on the berms or dams of the basin unless the basin is entirely excavated.

3. **Rainwater Harvesting**

   The *City of Flagstaff Stormwater Management Design Manual and LID Manual* include standards for active and passive rainwater harvesting. An active rainwater harvesting system is not required if native/drought tolerant plants are installed and passive rainwater harvesting techniques are utilized, or landscape water demand can be met through other sources of non-potable water.

10-50.60.080 Maintenance

A. **Maintenance Required**

1. Maintenance of all landscaping shall be the responsibility of the applicant, lessee, heirs, assigns, agent, homeowners' association, or other liable entity of the property and shall consist of regular watering; pruning, mowing, fertilizing, weed removal, and the removal and replacement of dead plants, irrigation systems and landscape features. This shall include maintenance of approved landscaping in the public right-of-way.

2. Existing non-native invasive trees as determined by the Director, as well as trees that are dead, diseased, injured, in danger of falling upon existing or proposed structures, overhang or abut a building so as to create a potential fire hazard, interfere with the growth of other trees or existing utilities, or are located within sight lines at intersection streets and

driveways may be cut down and removed. Such tree(s) are not required to be replaced with new trees.

3. The applicant or liable entity in control of any private premises shall at all times maintain the premises free of litter and weeds in compliance with City Code Title 6 (Police Regulations) and this Division.

4. Maintenance of approved landscaping in rights-of-way, including street trees, shall be maintained in compliance with *Engineering Standards,* Title 18, Chapter 18-05 (Maintenance).

5. Any plant materials included in an approved landscaping plan that do not survive after installation shall be replaced with plant material(s) of the same or like species of equal size within the next planting season but, in any event, within six months of the plant's demise. Failure to replace said plant materials within the specified time period shall be enforced in compliance with the Enforcement provisions of Division 10-20.110 (Enforcement).

B. **Use of Pesticides and Herbicides**

1. **General**
If pesticides and herbicides are used in landscape areas, organic pest control methods are preferred over synthetic pesticide use. Pesticides shall be applied in compliance with the Arizona Department of Environmental Quality (ADEQ) "Groundwater Protection List" and the "Best Management Practices" for pesticide and herbicide application.

2. **Riparian corridor watercourse, wetland, or storm water drainage**
Pesticides, herbicides, and fertilizers shall not be applied within 50 feet of a riparian corridor watercourse, wetland, or stormwater drainage except as allowed by the Director for the following circumstances and when pesticide or herbicide applications will be done by a City approved applicator:

   a. The State or local Health Department recommends or directs their use to address a threat to public health;

   b. A county, state, or federal agency with jurisdiction directs their use for control of a State-listed noxious weed or plant pests covered by the Arizona State Department of Agriculture plant pest program and non-chemical alternatives have been evaluated and deemed ineffective;

   c. The Director finds that the use of pesticides and herbicides will have no adverse impact to fish and wildlife. Such a determination may be in the form of best management practices or an integrated pest management plan;

d. The use of a herbicide to control invasive plants would have less overall environmental impact than other control strategies; or

e. There is a serious threat to public safety, health, or the environment.